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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,528	06/25/2001	Michael A. Ekhaus	2222.0730001	5737

26111 7590 02/27/2009
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EXAMINER

STERRETT, JONATHAN G

ART UNIT	PAPER NUMBER
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3623

MAIL DATE	DELIVERY MODE
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02/27/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No. 09/887,528	Applicant(s) EKHAUS ET AL.	
	Examiner JONATHAN G. STERRETT	Art Unit 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8,9,10, 11-18,19,27,35, 36-44 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-8,11-18 and 36-44 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Final Office Action is responsive to 10 November 2008. Currently Claims 1-8, 11-18, 36-44 are rejected below. Claims 9, 10, 19, 27 and 35 are withdrawn. Claims 20-26 and 28-34 are cancelled.

Response to Arguments

2. Applicant's arguments have been fully considered, but are not persuasive.

The applicant argues that the minimal amendment to the claims to include "in a data processing device" make the claim statutory in light of the recent Bilski decision.

The applicant argues that the amendments to the claims makes the claims statutory re 35 USC 101.

The examiner respectfully disagrees.

The notations to the claims are a nominal recitation of technology. For example, in the forming and determining steps, which are key parts of the claimed invention (see Claim 1), there is no tie to a particular apparatus. Furthermore, the language of the amended claim (in Claim 1 for example) suggests that the method could be performed by a person (generating in memory and forming in a data processing device). Thus the claims are not statutory re 35 USC 101.

The applicant's arguments are broader than what the claims recite

The applicant argues that the cited reference fails to teach a unary ratings matrix.

The examiner respectfully disagrees.

Examiner maintains that Sheena does disclose a user's selected preferences are represented as binary data in said sparse unary ratings matrix in col. 5, lines 2-17 (where item profiles are generated from user profiles, where the user profiles include either an item rating or no rating and where the rating data is stored in a matrix). Accordingly, the disclosure of Sheena in col. 5, lines 2-17 and col. 11, lines 58-67 seems to be in direct agreement with Applicant's definition of unary ratings data in which there are only two types of information: positive and no information, where Examiner is equating positive information to be any rating given by the user for an item and no information to be that the user has not rated an item. Additionally, Figure 2 illustrates how user's ratings of items either exist (i.e., positive information) or do not exist (i.e., no information).

Furthermore, the teaching contained in Column 8 line 40-46 mentions the use of a zero for no rating and a 1 for a rating. This means that if two items are to be compared between two users (i.e. finding two users for a similarity analysis), then first we have to find two users that, in fact, have rated the same item, i.e. a rating of either zero or one for that particular item.

The similarity teachings of Sheena rely on ratings that are integer in value, however even before this is applied, a sparse unary matrix (i.e. where a rating is a zero

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or a one) is used to find where those users have actually rated an item. This limitation is mentioned in column 8 lines 40-46.

The fact that the applicant's invention, as disclosed in the specification, only uses a unary matrix (i.e. using ones or zeroes) as input when Sheena uses a combination of both numbers (to indicate relative degrees) and a unary matrix (to indicate whether a user has rated an item) does not prevent Sheena from making the claimed invention obvious.

Looking at the claims, we see the following recitation (looking at claim 1 as an example).

generating, in memory, a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binary data entries in said sparse unary ratings matrix, wherein each binary data entry has a value of either zero or one;

As discussed above, Sheena teaches this sparse unary ratings matrix that indicates whether a user has rated an item (i.e. from the user's selected preferences). This matrix, as discussed in column 8, includes using a 1 or a 0 - 1 being they've rated it; 0 they haven't rated it. Since it is understood in the art that there's a huge variety of choices a user could make in rating something they prefer, then the result would be "sparse" - there's many more selections than choices.

forming a plurality of data structures representing said sparse unary ratings matrix;

Again from column 8, Sheena uses matrices to store the indication that the user has rated an item (i.e. the sparse unary matrix) - this is supported by the use of subscripts denoting the matrices to store this data. These data structures in Sheena include a subjective rating (ie. a 1 to a 10) in addition to the matrix indicating something was rated. Note that the claim says the data structures “represent” the sparse unary ratings matrix – in Sheena, the resulting matrices that include whether something was rated (i.e. the sparse unary matrix) as well as what the rating was (i.e. the variable rating) “represent” the sparse unary matrix since they contain both whether something was rated as well as what the rating was. In the applicant's specification, only a 1 or a 0 is used. But the claim language is much broader, since the language says 'represents' which is a broad enough tie to include a rating composed of both an indication of selection (the sparse unary matrix) as well as a variable rating matrix (e.g. rating from a scale of 1 to 10 for that item selected to rate). See column 8 line 47-55

forming in a data processing device a runtime recommendation model from said plurality of data structures;

Sheena teaches performing a similarity analysis based on what user's have rated. This is where the specification differs from Sheena – the applicant ONLY uses a 1 or a 0 in indicating a selection, however Sheena's disclosure forms recommendations from the combination of the sparse unary matrix and a rating matrix. See column 8 line 47-55.

(The examiner omits the last determining and providing steps for brevity).

It is the examiner's position that the claimed invention is nothing more than a predictable combination of what is known in the art regarding using user's ratings of items, where those ratings are embodied in a matrix that indicates whether something has been rated as well as another matrix indicating what the variable ratings are.

Notwithstanding the specificity of what the applicant's disclose in the specification, the claims, as currently recited, are significantly broader than what is in the specification and the applicant's arguments.

The examiner reminds the applicant that the KSR decision from the Supreme Court emphasized caution in granting a patent based on a predictable combination of what is known in the prior art. Sheena teaches using matrices (i.e. including a sparse unary matrix) in order to profile and understand customer's preferences. The combination and manipulation of matrices to form models and make recommendations, as claimed, is at least a combination of teachings regarding using matrices (including a sparse unary matrix) where the result is a predictable one. The result is predictable because the output of manipulating and combining the matrices is based on mathematics.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-8, 11-18 and 36-41 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 11, 36 and 41 are rejected under 35 U.S.C. 101 based on Supreme Court precedent, and recent Federal Circuit decisions, the Office's guidance to examiners is that a § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

An example of a method claim that would not qualify as a statutory process would be a claim that recited purely mental steps. Thus, to qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

Here, applicant's method steps, fail the first prong of the new Federal Circuit decision since they are not tied to another statutory class and can be performed without the use of a particular apparatus. Thus, Claims 1, 11, 36 and 41 are non-statutory.

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Claims 2-8, 12-18, 37-40 are dependent claims and are non-statutory for the reasons given above for independent Claims 1, 11, 36 and 41.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7, 11-17 and 36-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheena et al. (U.S. 6,049,777).

As per claim 1, Sheena et al. discloses a method of preparing a recommendation to be accessed by a user comprising the steps of:

generating a sparse unary ratings matrix from the user's selected preferences, wherein said user's selected preferences are represented as binary data in said sparse unary ratings matrix (col. 5, lines 2-17; col. 11, lines 58-67; Figure 2; The system discloses using a sparse unary ratings matrix based on determining whether or not a user has rated an item, where a rating would be indicated by a positive value and no rating would be indicated by no value. This illustration reads on Applicant's definition of what is meant by "unary data" on page 12 of their Specification, where it states that "unary data indicates a ratings data in which there are only two types of information: positive and no information." Additionally, in col. 8, lines 41-46, Sheena et al. discloses

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using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

forming a plurality of data structures representing said sparse ratings matrix (col. 3, lines 40-57; col. 4, lines 56-67; The sparse ratings matrix is comprised of sparse vectors that represent item profiles and user profiles, where the item profiles include ratings on the items and the user profiles include users' ratings of the items.);

forming a runtime recommendation model from said plurality of data structures (col. 8, line 41-col. 9, line 56; Several similarity models are used to determine recommendations for users.);

determining a recommendation from said runtime recommendation model in response to a request for a recommendation (col. 6, lines 32-33 and 48-62; col. 7, lines 1-8 and 35-38; col. 8, line 28-col. 9, line 56; col. 10, lines 21-23; col. 13, lines 6-9; col. 26, line 66-col. 27, line 1; col. 27, lines 18-22; Several similarity models are used to determine recommendations for users. Requested data objects retrieve profiles that match the criteria from a user's request for a recommendation.); and

providing said recommendation in response to said request (col. 6, lines 32-33 and 48-62; col. 7, lines 1-8 and 35-38; col. 10, lines 21-23; col. 11, lines 45-55; col. 13, lines 6-9; col. 26, line 66-col. 27, line 1; col. 27, lines 18-22; item 110 in Figures 1 and 3; Recommendations are provided to users. Requested data objects retrieve profiles that match the criteria from a user's request for a recommendation.).

Sheena does not teach where each binary data entry has a value of either zero or one. However, the recited method steps would be performed the same regardless of

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the specific data. Further, the structural elements remain the same regardless of the specific data. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, *see In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994); MPEP ' 2106.

Official Notice is taken that entering a 0 or 1 for selecting a choice is old and well known in the art and in combination with the teachings of Sheena would have been obvious to one of ordinary skill in the art at the time of the invention by producing a predictable result in combination with the teachings of Sheena.regarding providing ratings (see column 4 line 24-25).

As per claim 2, Sheena et al. discloses the method of claim 1, further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model (col. 8, lines 41-46; col. 11, lines 30-32; col. 16, lines 22-33; Zeros and ones (i.e., unary numbers) are used in the recommendation models.).

As per claim 3, Sheena et al. discloses the method of claim 1, further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model (col. 10, lines 5-15; col. 17, lines 4-6; Numbers between zero and one or greater than one (i.e., binary numbers) are used in the recommendation models.).

As per claim 4, Sheena et al. discloses the method of claim 2, wherein said calculating a unary multiplicity voting recommendation comprises calculating an

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anonymous recommendation (col. 3, lines 22-23; A user profile may represent more than one user, thus maintaining the anonymity of the individual users.).

As per claim 5, Sheena et al. discloses the method of claim 2, wherein calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation (col. 3, lines 36-38; col. 24, lines 58-60).

As per claim 6, Sheena et al. discloses the method of claim 3, wherein calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation (col. 3, lines 22-23; A user profile may represent more than one user, thus maintaining the anonymity of the individual users.).

As per claim 7, Sheena et al. discloses the method of claim 3, wherein calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation (col. 3, lines 36-38; col. 24, lines 58-60).

As per claim 11, Sheena et al. discloses a method of preparing a user recommendation comprising:

generating a sparse unary ratings matrix, wherein said sparse unary ratings matrix includes ratings data represented as binary data (col. 5, lines 2-17; col. 11, lines 58-67; Figure 2; The system discloses using a sparse unary ratings matrix based on determining whether or not a user has rated an item, where a rating would be indicated by a positive value and no rating would be indicated by no value. This illustration reads on Applicant's definition of what is meant by "unary data" on page 12 of their Specification, where it states that "unary data indicates a ratings data in which there are only two types of information: positive and no information." Additionally, in col. 8, lines

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41-46, Sheena et al. discloses using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

providing an update ratings data structure (col. 3, lines 30-33; col. 7, lines 54-65);

forming a plurality of data structures representing said sparse unary ratings matrix (col. 3, lines 40-57; col. 4, lines 56-67; The sparse ratings matrix is comprised of sparse vectors that represent item profiles and user profiles, where the item profiles include ratings on the items and the user profiles include users' ratings of the items. Additionally, in col. 8, lines 41-46, Sheena et al. discloses using 1 to indicate that the user has rated the item and 0 to indicate that the user has not rated the item.);

forming a runtime recommendation model from said plurality of data structures and said update ratings data structure (col. 8, line 41-col. 9, line 56; Several similarity models are used to determine recommendations for users.);

determining a recommendation from said runtime recommendation model in response to a request for a recommendation (col. 6, lines 32-33 and 48-62; col. 7, lines 1-8 and 35-38; col. 8, line 28-col. 9, line 56; col. 10, lines 21-23; col. 13, lines 6-9; col. 26, line 66-col. 27, line 1; col. 27, lines 18-22; Several similarity models are used to determine recommendations for users. Requested data objects retrieve profiles that match the criteria from a user's request for a recommendation.); and

providing said recommendation in response to said request (col. 6, lines 32-33 and 48-62; col. 7, lines 1-8 and 35-38; col. 10, lines 21-23; col. 11, lines 45-55; col. 13, lines 6-9; col. 26, line 66-col. 27, line 1; col. 27, lines 18-22; item 110 in Figures 1 and 3;

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Recommendations are provided to users. Requested data objects retrieve profiles that match the criteria from a user's request for a recommendation.).

Claims 12-17 and 36-44 recite subject matter similar to the limitations already rejected above in claims 1-7 and 11. Therefore, claims 12-17 and 36-41 are rejected on the same basis as claims 1-7 and 11 above.

Additionally, with regard to independent claims 36 and 41, Sheena et al. discloses applying the sparse vectors/arrays (i.e., the user profiles and the item profiles) to several numbers of recommendation models that use zero and non-zero entries, thereby using a first recommendation model and a second recommendation model (col. 3, lines 34-57; col. 19, lines 50-50; col. 20).

6. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheena et al. (U.S. 6,049,777) and Schwinger, Julian, "The Geometry of Quantum States," Feb. 15, 1960.

As per claim 8, Sheena et al. discloses wherein forming a runtime recommendation model from said plurality of data structures comprises: mapping each rated item in the sparse unary ratings matrix to a category (col. 15, lines 3-11 and 18-23).

Sheena et al. does not expressly disclose wherein said mapping step comprises multiplying said unary ratings matrices by a mappings matrix between said unary ratings matrices and a plurality of categories.

Schwinger discloses multiplying matrices by a mappings matrix in order to map the matrices to that matrix (middle of page 260, "The product of an operator with a vector expresses a mapping upon another vector in the same space..."). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Sheena et al. to use matrix multiplication as disclosed in Schwinger to map the rated items in the sparse unary ratings matrix to a category because doing so is a standard way in the art to map matrix data and also, because using a mathematical formula to map the matrix provides an efficient and effective means for mapping data, thereby enhancing Sheena et al.'s current means of mapping data.

Claim 18 recites subject matter similar to the limitations already rejected above in claim 8. Therefore, claim 18 is rejected on the same basis as claim 8 above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beth Boswell, can be reached at 571-272-6737.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/JGS/

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/Jonathan G. Sterrett/

Primary Examiner, Art Unit 3623